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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,916	09/11/2003	Peter Bauer	48628	2294
7590	06/01/2004			
Herbert B. Keil KEIL & WEINKAUF 1350 Connecticut Ave., N.W. Washington, DC 20036			EXAMINER CHEUNG, WILLIAM K	
			ART UNIT 1713	PAPER NUMBER

DATE MAILED: 06/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/658,916

Applicant(s)

BAUER ET AL.

Examiner

William K Cheung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/11/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-9 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of U.S. Patent No. 6,649,709.

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Although the conflicting claims are not identical, they are not patentably distinct from each other because the genus claims 1-16 of U.S. Patent No. 6,649,709 generically includes the species claims 1-9 of instant application.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller et al. (US 5,324,697), or Smith et al. (US 4,587,227), each individually in view of Hennenberger et al. (EP 0571 826).

The invention of claims 1-4 relates to a **continuous gas-phase fluidized-bed** process for the preparation of **ethylene homopolymers or copolymers** having a **density d of from 0.87 to 0.97 g/cm³**, in which **ethylene or a mixture of ethylene and C₃-C₈ alpha-monoolefins** are (co)polymerized in the presence of a **supported chromium catalyst** wherein the support is a **porous oxide or SiO₂** in the polymerization zone of a gas-phase fluidized-bed reactor under **pressure ranging from 1 to 100 bar** and at **temperature ranging from 30 to 125°C** in the gas phase in an agitated bed of bulk material comprising particulate polymer, the resultant heat of polymerization is removed by cooling the recirculated reactor gas and the **resulting (co)polymer is removed from the vapor-phase fluidized-bed reactor**, wherein, for the preparation of a (co)polymer of a specified **density d** , copolymerization is carried out at a temperature which is in the range restricted by an **upper envelope defined by equation I**

$$(I) \quad T_H = 171 + (6d') / (0.84 - d')$$

And a lower limit having the equation II

$$(II) \quad T_L = 175 + (7.3 d') / (0.837 - d')$$

where:

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T_H is the maximum reaction temperature in °C,

T_L is the minimum reaction temperature in °C, and

d' is the numerical value of the density of the copolymer to be prepared.

Based on the density range of instant claim 1, T_H in Equation I has a value ranges from -4 to 125 °C and T_L has a value ranges from -19 to 119.7 °C. Further, the supported chromium catalyst **is activated at a temperature between 600 and 800 °C** and the **average pore volume ranges from 1.0 to 3.0 mL/g**. Ethylene is copolymerized with **1-hexene**.

Mueller et al. disclose a polymerization process for the preparation of ethylene homopolymers or copolymers having a density within the range of 0.87 to 0.97 g/cm³ (col. 7, Table) in which ethylene or a mixture of ethylene and C₃-C₈ alpha-monoolefins (col. 5, line 48-50) are (co)polymerized in the presence of a supported chromium catalyst (col. 2, line 55-56) in the polymerization vessel under pressure ranging from 20 to 50 bar (col. 6, line 4) and at temperature ranging from 90 to 110°C (col. 6, line 4-5). Further, the supported chromium catalyst is activated at 650 °C (col. 6, line 23), a temperature between 600 and 800 °C and the average pore volume greater than 1.0 mL/g (col. 2, line 32, 65). Ethylene is copolymerized with 1-hexene (col. 5, line 50). Mueller et al. (col. 3, line 9-22) disclose that the aluminum phosphate support is porous with a pore volume of > 1 cm³/g. The examiner takes Official Notice that aluminum phosphate is an oxide of phosphorous.

The difference between the invention of claims 1-4 and the disclosure of Mueller et al. is that Mueller et al. are on the equation I and II disclosed by the instant application.

Hennenberger et al. disclose the gas phase copolymerization of ethylene using a Ziegler Natta polymerization process to produce ethylene copolymers (Abstract, line 1-2) with monomer compositions that are substantially similar to the ethylene copolymers of Mueller et al. Because Hennenberger et al. disclose a set of equations for describing the density relationship with the reactor temperature. Motivated by the expectation of success to develop a similar set of equations to have a better control on the densities of the ethylene homopolymers and copolymers produced by the process, it would have been obvious for one of ordinary skill in the art to use the similar approach of Hennenberger et al. to develop another set of equations to describe the density – reactor temperature relationship for the process disclosed by Mueller et al. to obtain the invention of claims 1-4. Furthermore, Hennenberger et al. disclose Equation I and II that are substantially similar to Equation I and II of the instant application. The minor differences between the sets of equations are the constants of the equations. However, the constants are still within experimental error of less than 2% difference.

Equation I of Hennenberger et al.

$$(I) \quad T_H = 170 + (6d') / (0.84 - d')$$

Equation II of Hennenberger et al.

$$(II) \quad T_L = 173 + (7.3 d') / (0.837 - d')$$

where:

T_H is the maximum reaction temperature in °C,

T_L is the minimum reaction temperature in °C, and

d' is the numerical value of the density of the copolymer to be prepared.

Smith et al. disclose a **polymerization** process that can be processed using a fluidized bed reactor (col. 5, line 57) for the preparation of **ethylene homopolymers or copolymers** having a **density ranges from 0.92 to 0.96 g/cm³** (col. 6, line 34), in which **ethylene or a mixture of ethylene and C₂-C₁₂ alpha-monoolefins** (col. 5, line 51) are (co)polymerized in the presence of a **supported chromium catalyst** (col. 5, line 9-10) in a polymerization vessel under pressure ranging from 100 to 700 psi (**6.98 to 48.26 bar**) (col. 6, line 7) and at temperature ranging from 0 to 450°F (**-18 to 232 °C**) (col. 6, line 6). Further, the supported chromium catalyst is **activated at a temperature between 400 and 800 °C** (col. 10, Table 1) and the **average pore volume ranges from 0.4 to 3.5 mL/g** (col. 4, line 68). Ethylene is copolymerized with a list of

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comonomers that include **1-hexene** (col. 1, line 39; col. 5, line 61). The support for the catalyst system as shown in example III (col. 9, line 29-34) is a **porous silicon dioxide**.

The difference between the invention of claims 1-4 and the disclosure of Smith et al. is that Smith et al. are on the equation I and II disclosed by the instant application.

Hennenberger et al. disclose the gas phase copolymerization of ethylene using a Ziegler Natta polymerization process to produce ethylene copolymers (Abstract, line 1-2) with monomer compositions that are substantially similar to the ethylene copolymers of Smith et al. Because Hennenberger et al. disclose a set of equations for describing the density relationship with the reactor temperature. Motivated by the expectation of success to develop a similar set of equations to have a better control on the densities of the ethylene homopolymers and copolymers produced by the process, it would have been obvious for one of ordinary skill in the art to use the similar approach of Hennenberger et al. to develop another set of equations to describe the density – reactor temperature relationship for the process disclosed by Smith et al. to obtain the invention of claims 1-9. Furthermore, Hennenberger et al. disclose Equation I and II that are substantially similar to Equation I and II of the instant application. The minor differences between the sets of equations are the constants of the equations. However, the constants are still within experimental error of less than 2% difference.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 5-9 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mueller et al. (US 5,324,697).

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Mueller et al. disclose a polymerization process for the preparation of ethylene homopolymers or copolymers having a density within the range of 0.87 to 0.97 g/cm³ (col. 7, Table) in which ethylene or a mixture of ethylene and C₃-C₈ alpha-monoolefins (col. 5, line 48-50) are (co)polymerized in the presence of a supported chromium catalyst (col. 2, line 55-56) in the polymerization vessel under pressure ranging from 20 to 50 bar (col. 6, line 4) and at temperature ranging from 90 to 110°C (col. 6, line 4-5). Further, the supported chromium catalyst is activated at 650 °C (col. 6, line 23), a temperature between 600 and 800 °C and the average pore volume greater than 1.0 mL/g (col. 2, line 32, 65). Ethylene is copolymerized with 1-hexene (col. 5, line 50). Mueller et al. (col. 3, line 9-22) disclose that the aluminum phosphate support is porous with a pore volume of > 1 cm³/g. The examiner takes Official Notice that aluminum phosphate is an oxide of phosphorous.

Therefore, in view of the substantially identical process disclosed in Mueller et al. and the process used for preparing the claimed polymer product of claims 5-7, the examiner has a reasonable basis to believe that the polymer products and their density, MFR properties are inherently possessed by Mueller et al.

Regarding claims 8-9 which relate to a film and the process for making the film, the claims are rejected together along with the polymer product claims 5-7 since claims 8-9 do not set forth any process or product limitations in the claims.

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Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William K Cheung whose telephone number is (571) 272-1097. The examiner can normally be reached on Monday-Friday 9:00AM to 2:00PM; 4:00PM to 8:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David WU can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



William K. Cheung
Primary Patent Examiner

May 25, 2004